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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/702,455

11/07/2003

Kenji Yamaguchi

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22850 7590 02/09/2007

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
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EXAMINER

FREJD, RUSSELL WARREN

ART UNIT

PAPER NUMBER

2128

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/702,455

Applicant(s)

YAMAGUCHI, KENJI

Examiner

Russell Frejd

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 7-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/249,139.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11.7.03</u> | 6) <input type="checkbox"/> Other: _____  |

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***Examination of Application #10/702,455***

1. Claims 7-10 of application 10/702,455, filed on 7-November-2003, are presented for examination. This application is a DIV of 10/093933, filed on 11-March-2002, now USP 6,727,724; which is a CON of 09/714148, filed on 17-November-2000, now USP 6,373,274, which is a CON of 09/249139, filed on 12-February-1999, now USP 6,169,415.

Claims 1-6 and 11-19 were cancelled via the Preliminary Amendment received on 7-November-2003.

***Specification Objections***

2. The disclosure is objected to because of the following informalities:

The information included in the *Cross-Reference to Related Application* section of the Preliminary Amendment needs to be updated to incorporate the current patent numbers of the applications cited therein.

The Examiner respectfully notes that the references cited on pages 1-2 and 52 of the specification are not cited on a corresponding IDS, and have not been considered at this time.

Also,

Page 12	line 18	the phrase "facilitates to determine" appears to be grammatically incorrect.
Page 13	line 5	the same phrase as noted above.
Page 33	lines 14-15	the term "mask cannel" appears to be misspelled.
	line 17	the phrase "hardly affects on determination" appears to be

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grammatically incorrect.

Page 52      line 10      the phrase "where "shift and ratio method" is" appears to be  
grammatically incorrect.

Page 52      line 15      the phrase "both Rm method and Gm method are" appears to be  
grammatically incorrect.

***Claim Rejections under 35 U.S.C. § 112, 2nd Paragraph***

3.      Claims 7 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The following is a list of the specific rejections:

Claim 7      line 11      the term "virtual paint" is vague.  
                 line 13      the term "finely changed" is vague and indefinite.  
                 line 23      the phrase "estimated value, has a predetermined shape" is  
                                 vague.  
Claim 10      line 4      the phrase "in a vicinity of 0 V." is vague and indefinite.

***Claim Rejections under 35 U.S.C. § 101***

4.      35 U.S.C. 101 reads as follows:  
            Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

4.1      Claims 7-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The invention claims a characteristic evaluation method for

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insulated gate type transistors which reduces the error due to the uncertainty of a threshold voltage to permit channel narrowing extraction.

**4.2** This claimed subject matter lacks a practical application of a judicial exception (law of nature, abstract idea, naturally occurring article/phenomenon) since it fails to produce a useful, concrete and tangible result.

Specifically, the claimed subject matter does not produce a tangible result because the claimed subject matter fails to produce a result that is limited to having real world value rather than a result that may be interpreted to be abstract in nature as, for example, a thought, a computation, or manipulated data. More specifically, the claimed subject matter provides for: (in claim 7)

- a) **preparing** (emphasis added) at least two insulated gate type transistors including first and second insulated gate type transistors that differ from each other only in mask channel width;*
- b) **extracting** a threshold voltage of said first transistor that has a mask channel width larger than that of said second transistor, **estimating** a threshold voltage of said second transistor, and **employing** a value of the estimated threshold voltage as a first estimated value;*
- c) when a **difference** between a gate voltage of said first transistor and said extracted threshold voltage of said first transistor is defined as a first gate overdrive, a **difference** between a gate voltage of said second transistors and said first estimated value is defined as a second gate overdrive, and an **X-Y plane is assumed** whose X-axis is said mask channel width and Y-axis is source-drain conductance, (i) **extracting a virtual point** at which a change in Y coordinate value is estimated to be approximately zero when said first and second gate overdrives are finely changed, from a first characteristic curve exhibiting a relationship between said mask channel*

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*widths of said first and second transistors and said source-drain conductance, and **employing a value** of an X coordinate at said virtual point as a second estimated value or (ii) **employing a value** of an X intercept of said first characteristic curve as said second estimated value; d) repeating said step c) while varying said first estimated value; c) after said steps c) and d), (i) finding, based on said first and second estimated values, an **optimum first estimated value** with which a second characteristic curve exhibiting a relationship between said second gate overdrive and said second estimated value in an X-Y plane whose X-axis is said second gate overdrive and Y-axis is a value related to said second estimated value, has a predetermined shape within a predetermined range of said second gate overdrive, and (ii) determining a true threshold voltage of said second transistor based on said optimum first estimated value; and f) **determining a difference** between said mask channel width and an effective channel width based on said true threshold voltage.*

This produced "difference" result remains in the abstract and, thus, fails to achieve the required status of having real world value, because the claimed limitations are determined to convert one set of numbers into another set of numbers, whereby the method does not manipulate appropriate subject matter, and thus cannot constitute a statutory process (MPEP Section 2106.02).

### **Allowed Claims**

5. Claims 7-10 are deemed allowable over the prior art of record at this time, pending resolution of any rejections noted above, because the prior art does not specifically disclose a

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characteristic evaluation method for insulated gate type transistors which reduces the error due to the uncertainty of a threshold voltage to permit channel narrowing extraction.

***Response Guidelines***

**6.** A shortened statutory period for response to this action is set to expire **3 (three) months and 0 (zero) days** from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02, 710.02(b)).

**6.1 Any response to the Examiner in regard to this non-final action should be**

**directed to:** Russell Frejd, telephone number (571) 272-3779, Monday-Friday from 0530 to 1400 ET, **or** the examiner's supervisor, Kamini Shah, telephone number (571) 272-2279. Inquires of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist (571) 272-2100.

**mailed to:** Commissioner of Patents and Trademarks  
P.O. Box 1450, Alexandria, VA 22313-1450

**or faxed to:** (571) 273-8300

Hand-delivered responses should be brought to the Customer Service Window, Randolph Building, 401 Dulany Street, Alexandria, VA, 22314.

**Date:** 29-January-2007

  
**RUSSELL FREJD**  
**PRIMARY EXAMINER**